

**Comments Provided to DPS on
Proposed Amendments to IgCC
Chapter 7**

Chapter 7 – Water Resource Conservation, Quality and Efficiency 701.1 Scope. The provisions of this chapter shall establish the means of conserving water, protecting water quality and providing for safe water consumption.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: No action required

2011 ASHRAE 189.1 CORRELATION: 6.1

702.1 Fitting and fixture consumption. Fixtures shall comply with Table 702.1 and the following: 1. For dwelling unit and guestroom shower compartments with a floor area of not greater than 2600 in 2 (1.7 m²) the combined flow rate from shower water outlets that are capable of operating simultaneously including rain systems, waterfalls, body sprays and jets shall not exceed 2.0 gallons per minute (gpm) (7.6 L/min). Where the floor area of such shower compartments is greater than 2600 in 2 (1.7 m²) the combined flow rate from simultaneously operating shower water outlets shall not exceed 2.0 gpm (7.6 L/min) for each additional 2600 in 2 (1.7 m²) of floor area or portion thereof. 2. In gang shower rooms, the combined flow rate from shower water outlets that are capable of operating simultaneously including rain systems, waterfalls, body sprays and jets shall not exceed 2.0 gpm (7.6 L/min) for every 1600 in 2 (1.01 m²) or portion thereof of room floor area. 3. In shower compartments required to comply with the requirements of Chapter 11 of the International Building Code, the combined flow rate from shower water outlets that are capable of operating simultaneously including rain systems, waterfalls, body sprays and jets shall not exceed 4.0 gpm (15.1 L/min) for every 2600 in 2 (1.7 m²) or portion thereof of room floor area.

702.2 Combination tub and shower valves. Tub spout leakage from combination tub and shower valves that occurs when the outlet flow is diverted to the shower shall not exceed 0.1 gpm, measured in accordance with the requirements of ASME A112.18.1/CSA B125.1.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC, Plumbing and Fuel Gas code

2011 ASHRAE 189.1 CORRELATION: 6.3.2.1

702.3 Food establishment prerinse spray valves. Food establishment prerinse spray valves shall have a maximum flow rate in accordance with Table 702.1 and shall shut off automatically when released.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by HHS (Verify)

2011 ASHRAE 189.1 CORRELATION: 6.4.2.2

702.4 Drinking fountain controls. Drinking fountains equipped with manually controlled valves shall shut off automatically upon the release of the valve. Metered drinking fountains shall comply with the flow volume specified in Table 702.1.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

702.5 Nonwater urinal connection. The fixture drain for nonwater urinals shall connect to a branch drain that serves one or more lavatories, water closets or water-using urinals that discharge upstream of such urinals.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

702.6 Appliances. Sections 702.6.1 through 702.6.4 shall regulate appliances that are not related to space conditioning. 702.6.1 Clothes washers. Clothes washers of the type in the ENERGY STAR program as defined in "ENERGY STAR Program Requirements, Product Specification for Clothes Washers, Eligibility Criteria," shall have a water factor (WF) not exceeding 6.0 and a modified energy factor (MEF) of not less than 2.0 702.6.2 Ice makers. Ice makers shall not be water cooled. Ice makers producing cubed-type ice shall be ENERGY STAR qualified as commercial ice machines. Ice makers of a type not currently ENERGY STAR qualified, such as flake, nugget or continuous-type ice makers, shall not exceed the total water use of 25 gallons per 100 pounds (208 L per 100 kg) of ice produced. 702.6.3 Steam cookers. Steam cookers shall consume not more than the amounts indicated in Table 610.2.3. 702.6.4 Dishwashers. Dishwashers shall be ENERGY STAR qualified where an ENERGY STAR category exists for the specific dishwasher type. Where an ENERGY STAR category does not exist, the dishwasher shall be in accordance with Table 702.6.4.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Redundant: Covered by Chapter 6 section 609

2011 ASHRAE 189.1 CORRELATION: 6.3.2.2; 6.4.2.2

702.7 Municipal reclaimed water. Where required by Table 302.1 and where municipal reclaimed water is accessible and allowed for such use by the laws, rules and ordinances applicable in the jurisdiction, it shall be supplied to water closets, water-supplied urinals, water-supplied trap primers and applicable industrial uses. A municipal reclaimed water supply shall be deemed accessible where the supply is not greater than 150 percent of the distance that the potable water supply is from the lot boundary or the supply is within 100 feet (30.5 m) of a potable water supply that serves the lot.

PROPOSED ACTION: Delete (702.7 is a Jurisdictional Elective)

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: 6.3.3; 6.4.3

702.8 Efficient hot and tempered water distribution. Hot and tempered water distribution shall comply with either the maximum pipe length or maximum pipe volume limits in this section. Hot and tempered water shall be delivered to the outlets of individual showers, combination tub-showers, sinks, lavatories, dishwashers, washing machines and hot water hose bibbs in accordance with Section 702.8.1 or Section 702.8.2. For purposes of this section, references to pipe shall include tubing. For purposes of this section, the source of hot or tempered water shall be considered to be a water heater, boiler, circulation loop piping or electrically heat-traced piping.

702.8.1 Maximum allowable pipe length method. The maximum allowable pipe length from the source of hot or tempered water to the termination of the fixture supply pipe shall be in accordance with the maximum pipe length columns in Table 702.8.2. Where the length contains more than one size of pipe, the largest size shall be used for determining the maximum allowable length of the pipe in Table 702.8.2.

702.8.2 Maximum allowable pipe volume method. The water volume in the piping shall be calculated in accordance with Section 702.8.2.1. The maximum volume of hot or tempered water in the piping to public lavatory faucets, metering or non-metering, shall be 2 ounces (0.06 L). For fixtures other than public lavatory faucets, the maximum volume shall be 64 ounces (1.89 L) for hot or tempered water from a water heater or boiler; and 24 ounces (0.7 L) for hot or tempered water from a circulation loop pipe or an electrically heat-traced pipe.

702.8.2.1 Water volume determination. The volume shall be the sum of the internal volumes of pipe, fittings, valves, meters and manifolds between the source of hot water and the termination of the fixture supply pipe. The volume shall be determined from the liquid ounces per foot column of Table 702.8.2. The volume contained within fixture shutoff valves, flexible water supply connectors to a fixture fitting, or within a fixture fitting shall not be included in the water volume determination. Where hot or tempered water is supplied by a circulation loop pipe or an electrically heat-traced pipe, the volume shall include the portion of the fitting on the source pipe that supplies water to the fixture.

702.9 Trap priming water. Potable water shall not be used for trap priming purposes where an alternate nonpotable onsite water distribution system, a reclaimed water distribution system or a gray water distribution system is available.

702.9.1 Continuous operation prohibited. Trap primers that allow continuous water flow shall be prohibited.

702.9.2 Volume limitation. Trap primers shall be of the type that use not more than 30 gallons (114 L) per year per trap.

702.9.3 Water criteria. Where nonpotable water is available and is already being used to supply plumbing fixtures, such water shall be used to supply trap primers.

702.10 Water-powered pumps. Water-powered pumps shall not be used as the primary means of removing ground water from sumps. Where used as an emergency backup pump for the primary pump, the primary pump shall be an electrically powered pump and the water-powered pump shall be equipped with an auditory alarm that indicates when the water-powered pump is operating. The alarm shall have a minimum sound pressure level rating of 85 dB measured at a distance of 10 feet (3048 mm). Where water-powered pumps are used, they shall have a water-efficiency factor of pumping not less than 2 gallons (7.6 L) of water to a height of 8 feet (2438 mm) for every 1 gallon (3.8 L) of water used to operate the pump, measured at a water pressure of 60 psi (413.7 kPa). Pumps shall be clearly marked as to the gallons (liters) of water pumped per gallon (liters) of potable water consumed.

702.11 Food service hand-washing faucets. Faucets for hand-washing sinks in food service preparation and serving areas shall be of the self-closing type.

702.12 Dipper wells. The water supply to a dipper well shall have a shutoff valve and flow control valve. Water flow into a dipper well shall not exceed 1 gpm (3.78 Lpm) at a supply pressure of 60 psi (413.7 kPa).

702.13 Automated vehicle wash facilities. Not less than 50 percent of the water used for the rinsing phase of the wash cycle at automated vehicle wash facilities shall be collected to be reused for the washing phase. Towel and chamois washing machines shall have high-level water cutoffs. Except for water recirculated within the facility, potable and nonpotable water use for automobile washing shall not exceed 40 gallons (151 L) per vehicle for in-bay automatic washing and 35 gallons (132.5 L) per vehicle for conveyor and express-type car washing. Exception: Bus and large commercial vehicle washing facilities.

702.14 Self-service vehicle wash facilities. Spray wand nozzles used at self-service vehicle wash facilities shall discharge not more than 3 gpm (11.4 Lpm). Faucets for chamois wringer sinks shall be of the self-closing type.

702.15 Vehicle washing facilities. Waste water from reverse osmosis water treatment systems installed in vehicle washing facilities shall discharge to the washing phase water holding tank.

702.16 Food waste disposers. The water flow into a commercial food waste disposer in a food establishment shall be controlled by a load-sensing device such that the water flow does not exceed 1 gpm (3.78 Lpm) under no-load operating conditions and 8 gpm (30.2 Lpm) under full-load operating conditions.

702.17 Combination ovens. Combination ovens shall consume not more than 3.5 gallons (13.25 L) per hour per steamer pan in any operational mode. Water consumption shall be tested in accordance with the requirements of ASTM F 1639

702.18 Autoclaves and sterilizers. Autoclaves and sterilizers requiring condensate tempering systems shall be of the type that does not require potable water to be blended with the discharge water to reduce the temperature of discharge.

702.18.1 Vacuum autoclaves and sterilizers. Vacuum sterilizers shall be prohibited from utilizing venturi-type vacuum mechanisms using water.

702.19 Liquid ring vacuum pumps. Except where the discharge is contaminated with hazardous materials or pathogens, the discharge water from liquid ring vacuum pumps shall be recovered for reuse within the pump or for other onsite applications. 702.20 Film processors. The cooling water discharge from water-cooled film processors shall be recovered and reused within the processor or for other onsite applications.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

703.1 Hydronic closed systems. Closed loop hydronic heating and cooling systems, and ground-source heat pump systems shall not be connected to a potable makeup water supply.

PROPOSED ACTION: DPS to provide language revision to clarify what water source may be used.

RATIONALE / IMPACT: Ambiguous

2011 ASHRAE 189.1 CORRELATION: None

703.2 Humidification systems. Except where greater humidity is required for medical, agricultural, archival or scientific research purposes, humidification systems shall be disabled and locked-out when the relative humidity in the space served is greater than 55 percent.

PROPOSED ACTION: Adopt with following modification: Except where greater humidity is required for medical, agricultural, archival, or scientific research purposes, or other user-defined purposes, humidification systems shall be disabled and locked-out when the relative humidity in the space served is greater than 55 percent.

RATIONALE / IMPACT: Language revision for broader latitude

2011 ASHRAE 189.1 CORRELATION: None

703.3 Condensate coolers and tempering. Potable water shall not be used as tempering water for sanitary discharge where the tempering water volume requirement for the application exceeds 200 gallons per day (757 liters per day). Where the tempering water volume required for the application is 200 gallons per day (757 liters per day) or less and potable water is used for tempering, water flow control devices shall be installed. Such control devices shall limit the flow rate of tempering water to that which is necessary to limit the temperature of the waste discharge to a maximum of 140°F (60°C). Such devices shall have a maximum flow rate of 200 gallons per day (757 liters per day).

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

703.4 Condensate drainage recovery. Condensate shall be collected and reused onsite for applications such as, but not limited to, water features, fountains, gray water collection systems and rainwater collection systems. Where onsite applications for condensate reuse are not available and the community sanitary sewer authority provides return credit for sanitary sewage or recycles sewage into a nonpotable water supply, condensate shall be discharged to the sanitary sewer system except where prohibited by the authority having jurisdiction.

PROPOSED ACTION: Move to Appendix A

RATIONALE / IMPACT: Good practice (May be difficult to implement to all projects)

2011 ASHRAE 189.1 CORRELATION: None

703.5 Heat exchangers. Once-through cooling shall be prohibited. Heat exchangers shall be connected to a recirculating water system such as a chilled water loop, cooling tower loop or similar recirculating system.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.6 Humidifier discharge. Water discharge from flow-through-type humidifiers and from the draining and flushing operations of other types of humidifiers shall be collected for reuse where a collection and reuse system exists.

PROPOSED ACTION: Move to Appendix A

RATIONALE / IMPACT: Good practice (May be difficult to implement to all projects)

2011 ASHRAE 189.1 CORRELATION: None

703.7 Cooling towers, evaporative condensers and fluid coolers. Cooling towers, evaporative condensers, and fluid coolers shall be installed in accordance with the requirements of Section 908 of the International Mechanical Code.

703.7.1 Location. Cooling towers, evaporative condensers and fluid coolers shall be located on the property as required for buildings in accordance with the International Building Code and shall be located so as to prevent the discharge vapor plumes from entering occupied spaces. Plume discharges shall be not less than 5 feet (1524 mm) above and 20 feet (6096 mm) away from any ventilation inlet to a building.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Redundant, Currently covered by 2012 IMC with amendments

2011 ASHRAE 189.1 CORRELATION: None

703.7.2 Once-through cooling. The use of potable water for once-through or single-pass cooling operations is prohibited.

PROPOSED ACTION: Adopt as written; renumber to stand alone

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.7.3 Metering. The metering of mechanical systems, system components, equipment and appliances shall be conducted in accordance with Section 705.2.

PROPOSED ACTION: Adopt as written. Revise 705.2 to correct reference, perhaps "Section 705". RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: 10.3.2.1.2.2

703.7.4 Controllers and alarms. Cooling towers, evaporative condensers, and fluid coolers shall be equipped with conductivity controllers and overflow alarms.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.7.5 Drift. Cooling towers, evaporative condensers and fluid coolers shall produce drift losses of not greater than 0.002 percent of the recirculated water volume for counter-flow systems, and not greater than 0.005 percent of the recirculated water for cross-flow systems.

PROPOSED ACTION: Adopt as written

ATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.7.6 Water quality. Where nonpotable water is used within cooling towers, evaporative condensers and fluid coolers, it shall conform to the water quality and treatment requirements of the jurisdiction having authority and the water chemistry guidelines recommended by the equipment manufacturers.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.7.7 Discharge. The discharge water from cooling towers used for air-conditioning systems shall be in compliance with Table 703.7.7. Where the discharge water is not

captured for reuse, it shall be discharged and treated in accordance with jurisdictional requirements, if applicable. Exception: Discharge water with total dissolved solids in excess of 1,500 ppm (1,500 mg/L), or silica in excess of 120 ppm (120 mg/L) measured as silicon dioxide shall not be required to meet the minimum parameters specified in Table 703.7.7.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: 6.4.2.1

703.8 Wet-hood exhaust scrubber systems. Where wet-hood exhaust scrubber systems are used, they shall incorporate a water recirculation system. The makeup water supplies for such systems shall be metered in accordance with Section 705.1. 703.8.1 Washdown systems. Hoods incorporating wash-down or rinsing systems for perchloric acid and similar chemicals shall utilize self-closing valves. Such systems shall be designed to drain automatically after each wash-down process has been completed. 703.8.2 Water sources. Where suitable alternate onsite nonpotable water or municipal reclaimed water is available, makeup water supplies to the recirculation system of wet-hood exhaust scrubbers shall utilize alternate onsite nonpotable water or municipal reclaimed water of a water quality appropriate for the application

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: 8.3.1.3

703.9 Evaporative cooling. Evaporative cooling systems shall use less than 4 gallons of water per ton-hour (4.2 L per kWh) of cooling capacity when system controls are set to the maximum water use. The amount of water use shall be expressed in maximum water use per ton-hour (kWh) of cooling capacity and shall be marked on the equipment, included in product user manuals, included in product information literature and included in manufacturer's instructions. Water use information shall be readily available at the time of code compliance inspection.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Does not apply to this climate zone

2011 ASHRAE 189.1 CORRELATION: 6.3.2.3

703.9.1 Overflow alarm. Cooling systems shall be equipped with an overflow alarm to alert building owners, tenants or maintenance personnel when the water refill valve continues to allow water to flow into the reservoir when the reservoir is full. The alarm shall have a minimum sound pressure level rating of 85 dB measured at a distance of 10 feet (3048 mm).

PROPOSED ACTION: Adopt with following modification: Cooling systems shall be equipped with an overflow alarm to alert building owners, tenants or maintenance personnel when the water refill valve continues to allow water to flow into the reservoir when the reservoir is full. The alarm shall have a minimum sound pressure level rating of 85 dB measured at a distance of 10 feet (3048 mm) The alarm itself shall comply with County noise ordinance and be tied to the building automation system.

RATIONALE / IMPACT: Language revision for clear intent

2011 ASHRAE 189.1 CORRELATION: None 703.9.2 Automatic pump shutoff. Cooling systems shall automatically cease pumping water to the evaporation pads when sensible heat reduction is not needed.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.9.3 Cooler reservoir discharge. A water quality management system such as a timer or water quality sensor shall be required. Where timers are used, the time interval between the discharge events of the water reservoir shall be set to 6 hours or greater of cooler operation. Continuous discharge or continuous bleed systems shall be prohibited.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: None

703.9.4 Discharge water reuse. Discharge water shall be reused where appropriate applications exist on site. Where a nonpotable water source system exists on site, evaporative cooler discharge water shall be collected and discharged to such collection system. Exception: Where the reservoir water will adversely affect the quality of the nonpotable water supply making the nonpotable water unusable for its intended purposes.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

011 ASHRAE 189.1 CORRELATION: None

703.9.5 Discharge water to drain. Where discharge water is not required to be recovered for reuse, the sump overflow pipe shall not directly connect to a drain. Where the discharge water is discharged into a sanitary drain, an air gap of not less than 6 inches (150 mm) shall be required between the termination of the discharge pipe and the drain opening. The discharge pipe shall terminate in a location that is readily visible to the building owners, tenants or maintenance personnel.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

704.1 Water softeners. Water softeners shall comply with Sections 704.1.1 through 704.1.4. 704.1.1 Demand-initiated regeneration. Water softeners shall be equipped with demand-initiated regeneration control systems. Such control systems shall automatically initiate the regeneration cycle after determining the depletion, or impending depletion of softening capacity.

704.1.2 Water consumption. Water softeners shall have a maximum water consumption during regeneration of 5 gallons (18.9 L) per 1000 grains (17.1 g/L) of hardness removed as measured in accordance with NSF 44. 704.1.3 Waste connections. Waste water from water softener regeneration shall not discharge to reclaimed water collection systems and shall discharge in accordance with the International Plumbing Code.

704.1.4 Efficiency and listing. Water softeners that regenerate in place, that are connected to the water system they serve by piping not exceeding 1 1/4 inches (31.8 mm) in diameter, or that have a volume of 3 cubic feet (0.085 m³) or more of cation exchange media shall have a rated salt efficiency of not less than 4,000 grains of total hardness exchange per pound of salt (477 g of total hardness exchange per kg of salt), based on sodium chloride equivalency and shall be listed and labeled in accordance with NSF 44. All other water softeners shall have a rated salt efficiency of not less than 3,500 grains of total hardness exchange per pound of salt (477 g of total hardness exchange per kg of salt), based on sodium chloride equivalency.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Projects of size recommended for implementation of IgCC likely to be on public utilities

2011 ASHRAE 189.1 CORRELATION: 6.4.2.3

704.2 Reverse osmosis water treatment systems. Point-of- use reverse osmosis treatment systems shall be listed and labeled in accordance with NSF 58. The discharge pipe from a reverse osmosis drinking water treatment unit shall connect to the building drainage system in accordance with Section 611.2 of the International Plumbing Code. Point-of-use reverse osmosis systems shall be equipped with an automatic shutoff valve that prevents the production of reject water when there is no demand for treated water.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

704.3 Onsite reclaimed water treatment systems. Onsite reclaimed water treatment systems, including gray water reuse treatment systems and waste water treatment systems, used to produce nonpotable water for use in water closet and urinal flushing, surface irrigation and similar applications shall listed and labeled to NSF 350.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

705.1 Metering. Water consumed from any source associated with the building or building site shall be metered. Each potable and reclaimed source of water, and each onsite non-potable water source, shall be metered separately. Meters shall be installed in accordance with the requirements of the International Plumbing Code. For the purposes of Section 705.1.1, Each meter identified in Table 705.1.1 shall be capable of communicating water consumption data remotely and at a minimum, be capable of providing daily data with electronic data storage and reporting capability that can produce reports that show daily, monthly, and annual water consumption.

705.1.1 Metering. All potable and nonpotable water supplied to the applications listed in Table 705.1.1 shall be individually metered in accordance with the requirements indicated in Table 705.1.1. Similar appliances and equipment shall be permitted to be grouped and supplied from piping connected to a single meter.

PROPOSED ACTION: Move to Appendix A

RATIONALE / IMPACT: Good practice but financially unreasonable

2011 ASHRAE 189.1 CORRELATION: None

706.1 Scope. The provisions of this section shall govern the use of nonpotable water and the construction, installation, and design of systems utilizing nonpotable water. The use and application of nonpotable water shall comply with laws, rules and ordinances applicable in the jurisdiction.

706.2 Signage required. Where nonpotable water is used for a water use application, signage shall be provided that reads as follows: "Nonpotable water is utilized for [APPLICATION NAME]. Caution: nonpotable water. DO NOT DRINK." The words shall be legibly and indelibly printed on a sign constructed of corrosion-resistant waterproof material. The letters of the words shall be not less than 0.5 inches (13 mm) in height and of a color in contrast to the background on which they are applied. In addition to the required wordage, the pictograph shown in Figure 706.2 shall appear on the signage required by this section. The required location of the signage and pictograph shall be in accordance with the applicable section of this code that requires the use of nonpotable water. 706.3 Water quality. Nonpotable water for each end use application shall meet the minimum water quality requirements as established for the application by the laws, rules and ordinances applicable in the jurisdiction.

PROPOSED ACTION: Delete RATIONALE / IMPACT: Regulated by WSSC

2011 ASHRAE 189.1 CORRELATION: None

707.1 Scope. The provisions of this section shall govern the construction, installation, alteration, and repair of rainwater collection and conveyance systems.

707.2 Potable water connections. Where a potable system is connected to a rainwater collection and conveyance system, the potable water supply shall be protected against backflow in accordance with Section 608 of the International Plumbing Code.

707.3 Nonpotable water connections. Where nonpotable water from different sources is combined in a system, the system shall comply with the most stringent of the requirements of this code that are applicable to such sources. 707.4 Installation. Except as provided for in this section, all systems shall be installed in compliance with the provisions of the International Plumbing Code and the manufacturer's instructions 707.5 Rainwater collected for landscape irrigation. Rainwater collected on the surface of the building site, or from the roof surfaces of the building, and used for landscape irrigation purposes shall not be limited regarding the method of application. Rainwater collected from elevated building locations that is to be used in building site irrigation, shall comply

with the provisions of Section 707 with the exception of Sections 707.11.1, 707.11.1.1 and 707.11.7.3. 707.6 Approved components and materials. Piping, plumbing components, and materials used in the collection and conveyance systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used.

707.7 Insect and vermin control. Inlets and vents to the system shall be protected to prevent the entrance of insects and vermin into storage tanks and piping systems. Screens installed on vent pipes, inlets, and overflow pipes shall have an aperture of not greater than 1/16 inch (1.6 mm) and shall be close fitting. Screen materials shall be compatible with contacting system components and shall not accelerate corrosion of system components. 707.8 Drainage. Water drained from the roof washer or debris excluder shall not be drained to the sanitary sewer. Such water shall be diverted from the storage tank and discharge in a location that will not cause erosion or damage to property. Roof washers and debris excluders shall be provided with an automatic means of self-draining between rain events, and shall not drain onto roof surfaces.

707.9 Freeze protection. Where sustained freezing temperatures occur, provisions shall be made to keep storage tanks and the related piping from freezing.

707.10 Trenching requirements. All water service piping, including piping containing rainwater, shall be separated from the building sewer by 5 feet (1524 mm) of undisturbed or compacted earth. Water service pipes, potable and nonpotable, shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried rainwater collection and distribution piping shall comply with the requirements of Section 306 of the International Plumbing Code for support, trenching, bedding, backfilling and tunneling. Exceptions: 1. The required separation distance shall not apply where the bottom of the water service pipe within 5 feet (1524 mm) of the sewer is a minimum of 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials shall comply with the International Plumbing Code for such applications. 2. Water service pipe is permitted to be located in the same trench with a building sewer, provided such sewer is constructed of materials that comply with the International Plumbing Code for such installations. 3. The required separation distance shall not apply where a potable or nonpotable water service pipe crosses a sewer pipe provided the water service pipe is sleeved to not less than 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with the International Plumbing Code for such applications. 4. Irrigation piping located outside of a building and downstream of the backflow preventer is not required to meet the trenching requirements where rainwater is used for outdoor applications.

707.11 Rainwater catchment and collection systems. The design of rainwater collection and conveyance systems shall conform to accepted engineering practice.

707.11.1 Collection surface. Rainwater shall be collected only from above-ground impervious roofing surfaces constructed from approved materials. Collection of water from vehicular parking or pedestrian surfaces shall be prohibited except where the water is used exclusively for landscape irrigation. Overflow and bleed-off pipes from roof-mounted appliances including but not limited to evaporative coolers, water heaters, and solar water heaters shall not discharge onto rainwater collection surfaces.

707.11.1.1 Potable water applications. Where collected water is to be treated to potable water standards, wood or cedar shake roofing materials, roofing materials treated with biocides, and lead flashing are prohibited on collection surfaces. Painted surfaces are acceptable only where paint has been certified to ensure that the toxicity level of the paint is acceptable for drinking water contact. Lead, chromium or zinc-based paints are not permitted on rainwater collection surfaces. Flat roofing products shall be certified to NSF P151. Rainwater shall not be collected from vegetated roof systems.

707.11.2 Debris excluders. Downspouts and leaders shall be connected to a roof washer and shall be equipped with a debris excluder or equivalent device to prevent the contamination of collected rainwater with leaves, sticks, pine needles and similar material. Debris excluders and equivalent devices shall be self-cleaning.

707.11.3.1 Slope. Roof gutters, leaders, and rainwater collection piping shall slope continuously toward collection inlets. Gutters and downspouts shall have a slope of not less than 1 unit in 96 units along their entire length, and shall not permit the collection or pooling of water at any point. Exception: Siphonic drainage systems installed in accordance with the manufacturer's installation instructions shall not be required to have slope.

707.11.3.2 Size. Gutters and downspouts shall be installed and sized in accordance with Section 1106.6 of the International Plumbing Code.

707.11.3.3 Cleanouts. Cleanouts shall be provided in the water conveyance system so as to allow access to all filters, flushes, pipes and downspouts.

707.11.4 Collection pipe materials. In buildings where rainwater collection and conveyance systems are installed, drainage piping approved for use within plumbing drainage systems shall be utilized to collect rainwater and convey it to the storage tank. Vent piping approved for use within plumbing venting systems shall be utilized for all vents within the rainwater system. Drains to a storm water discharge shall use approved waste piping.

707.11.3 Roof gutters and downspouts. Gutters and downspouts shall be constructed of materials that are compatible with the collection surface and the rainwater quality for the desired end use. Joints shall be water tight. Where the collected rainwater is to be used

for potable applications, gutters, downspouts, flashing and joints shall be constructed of materials approved for drinking water applications.

707.11.4.1 Joints. Collection piping conveying rainwater shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in the International Plumbing Code.

707.11.4.2 Size. Collection piping conveying rainwater from collection surfaces shall be sized in accordance with Chapter 11 of the International Plumbing Code and local rainfall rates 707.11.4.3 Marking. Additional marking of rainwater collection piping shall not be required beyond that required for sanitary drainage, waste, and vent piping by the International Plumbing Code.

707.11.5 Filtration. Collected rainwater shall be filtered to the level required for the intended end use. Filters shall be accessible for inspection and maintenance 707.11.6 Disinfection. Where the intended application and initial quality of the collected rainwater requires disinfection or other treatment or both, the collected rainwater shall be treated as needed to ensure that the required water quality is delivered at the point of use. Where chlorine is used for disinfection or treatment, water shall be tested for residual chlorine in accordance with ASTM D 1253. The levels of residual chlorine shall not exceed the levels allowed for the intended use in accordance with the requirements of the jurisdiction.

707.11.7 Storage tank. The design of the storage tank shall be in accordance with Sections 707.11.7.1 through 707.11.7.10. contamination. Rainwater storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 707.11.7.1.

707.11.7.1 Location. Storage tanks shall be installed either above or below grade. Above-grade storage tanks shall be protected from direct sunlight and shall be constructed using opaque, UV-resistant materials including, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially constructed sun barriers including, but not limited to, installation in garages, crawlspaces, or sheds. Storage tanks and their manholes shall not be located directly under any soil or waste piping or any source of 707.11.7.2 Materials. Where water is collected onsite, it shall be collected in an approved tank constructed of durable, nonabsorbent and corrosion-resistant materials. Storage vessels shall be compatible with the material being stored. Where collected water is to be treated to potable water standards, tanks shall be constructed of materials in accordance with NSF 61. Storage tanks shall be constructed of materials compatible with the type of disinfection system used to treat water upstream of the tank and used to maintain water quality within the tank.

707.11.7.2.1 Wooden tanks. Wooden storage tanks shall not be required to have a liner. Where a tank is lined and used for potable water, the liner shall be in accordance with NSF standards. Where unlined tanks are used, the species of wood shall be decay resistant and untreated.

707.11.7.3 Makeup water. Where an uninterrupted supply is required for the intended application, potable or municipally supplied reclaimed or recycled water shall be provided as a source of makeup water for the storage tank. The potable or reclaimed or recycled water supply shall be protected against backflow in accordance with the International Plumbing Code.

707.11.7.4 Overflow. The storage tank shall be equipped with an overflow pipe having the same or larger area as the sum of the areas of all tank inlet pipes. The overflow pipe shall be protected from insects or vermin and the discharge from such pipe shall be disposed of in a manner consistent with storm water runoff requirements of the jurisdiction. The overflow pipe shall discharge at a sufficient distance from the tank to avoid damaging the tank foundation or the adjacent property. The overflow drain shall not be equipped with a shutoff valve. A minimum of one cleanout shall be provided on each overflow pipe in accordance with Section 708 of the International Plumbing Code.

707.11.7.5 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings to storage tanks and other vessels shall have an approved locking device or shall otherwise be protected from unauthorized access. Below-grade storage tanks, located outside of the building, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter of not less than 24 inches (610 mm). Manholes shall extend not less than 4 inches (102 mm) above ground or shall be designed so as to prevent water infiltration. Finish grade shall be sloped away from the manhole to divert surface water from the manhole. Each manhole cover shall be secured to prevent unauthorized access. Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter and shall be not less than 4 inches (102 mm) above the finished grade level. The service port shall be secured to prevent unauthorized access. Exception: Storage tanks having a volume of less than 800 gallons (3028 L) and installed below grade shall not be required to be equipped with a manhole where provided with a service port that is not less than 8 inches (203 mm) in diameter.

707.11.7.6 Venting. Tanks shall be provided with a vent sized in accordance with the International Plumbing Code and based on the diameter of the tank influent pipe. Tank vents shall not be connected to sanitary drainage system vents.

707.11.7.7 Inlets. Storage tank inlets shall be designed to introduce water into the tank with minimum turbulence, and shall be located and designed to avoid agitating the contents of the storage tank.

707.11.7.8 Outlets. Outlets shall be located not less than 4 inches (102 mm) above the bottom of the storage tanks and shall not skim water from the surface 707.11.7.9 Draining of tanks. Where tanks require draining for service or cleaning, tanks shall be drained by using a pump or by a drain located at the lowest point in the tank. The discharge from draining the tank shall be disposed of in a manner consistent with the storm water runoff requirements of the jurisdiction and at a sufficient distance from the tank to avoid damaging the tank foundation.

707.11.7.10 Marking and signage. Each storage tank shall be marked with its rated capacity. Storage tanks shall bear signage that reads as follows: "CAUTION: NONPOTABLE WATER DO NOT DRINK." Where an opening is provided that could allow the entry of personnel, the opening shall bear signage that reads as follows: "DANGER CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of words shall be not less than 0.5 inches (13 mm) in height and shall be of a color that contrasts with the background on which they are applied.

707.11.8 Valves. Valves shall be supplied in accordance with Section 707.11.8.1.

707.11.8.1 Backwater valve. Backwater valves shall be installed on each overflow and tank drain pipe. Backwater valves shall be installed so that access is provided to the working parts for service and repair.

707.11.9 Roof washer. A sufficient amount of rainwater shall be diverted at the beginning of each rain event, and not allowed to enter the storage tank, to wash accumulated debris from the collection surface. The amount of rainfall to be diverted shall be field adjustable as necessary to minimize storage tank water contamination. The roof washer shall not rely on manually operated valves or devices, and shall operate automatically. Diverted rainwater shall not be drained to the roof surface, and shall be discharged in a manner consistent with the storm water runoff requirements of the jurisdiction. Roof washers shall be accessible for maintenance and service.

707.11.10 Vent piping. Storage tanks shall be provided with a vent in accordance with the requirements of Section 707.11.7.6. Vents shall be sized in accordance with the International Plumbing Code, based on the aggregate diameter of storage tank influent pipe(s). Vents shall be protected from contamination by means of a U-bend installed with the opening directed downward or an approved cap. Vent outlets shall extend a minimum of 4 inches (102 mm) above grade, or as necessary to prevent surface water from entering the storage tank. Vent openings shall be protected against the entrance of vermin and insects in accordance with the requirements of Section 707.7. 707.11.11 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be easily accessible and removable in order to perform repair, maintenance and cleaning. Where collected rainwater is to be treated to potable water standards, the

pump and all other pump components shall be listed, labeled and approved for use with potable water systems. Pressurized water shall be supplied at a pressure appropriate for the application and within the range specified by the International Plumbing Code. Where water could be supplied at an excessive pressure, a pressure-reducing valve shall be installed in accordance with the requirements of the International Plumbing Code. 707.11.11.1 Water-pressure-reducing valve or regulator. Where the rainwater pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the rainwater distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8 of the International Plumbing Code.

707.11.12 Distribution pipe. Distribution piping shall comply with Sections 707.11.12.1 through 707.11.12.4. 707.11.12.1 Materials. Distribution piping conveying rainwater shall conform to the standards and requirements specified by the International Plumbing Code for nonpotable or potable water, as applicable.

707.11.12.2 Joints. Distribution piping conveying rainwater shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in the International Plumbing Code.

707.11.12.3 Size. Distribution piping conveying rainwater shall be sized in accordance with the International Plumbing Code for the intended application 707.11.12.4 Marking. Nonpotable rainwater distribution piping shall be of the color purple and shall be embossed or integrally stamped or marked with the words: "CAUTION: NONPOTABLE WATER DO NOT DRINK" or shall be installed with a purple identification tape or wrap. Identification tape shall be not less than 3 inches (76 mm) wide and have white or black lettering on purple field stating "CAUTION: NONPOTABLE WATER DO NOT DRINK." Identification tape shall be installed on top of nonpotable rainwater distribution pipes, fastened not greater than every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe. Lettering shall be readily observable within the room or space where the piping is located. Exception: Piping located outside of the building and downstream of the backflow preventer is not required to be purple where rainwater is used for outdoor applications 707.12 Tests and inspections. Tests and inspection shall be performed in accordance with Sections 707.12.1 through 707.12.10.

707.12.1 Drainage and vent tests. The testing of rainwater collection piping, overflow piping, vent piping and storage tank drains shall be conducted in accordance with Section 312 of the International Plumbing Code.

707.12.2 Drainage and vent final test. A final test shall be applied to the rainwater collection piping, overflow piping, storage tank, and tank vent piping in accordance with Section 312.4 of the International Plumbing Code.

707.12.3 Water supply system test. The testing of makeup water supply piping and rainwater distribution piping shall be conducted in accordance with Section 312.5 of the International Plumbing Code. 707.12.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10 of the International Plumbing Code. 707.12.5 Inspection vermin and insect protection. Inlets and vents to the system shall be inspected to ensure that each is protected to prevent the entrance of insects or vermin into storage tank and piping systems in accordance with Section 707.8. 707.12.6 Roof gutter inspection and test. Roof gutters shall be inspected to verify that the installation and slope is in accordance with Section 707.11.3. Gutters shall be tested by pouring not less than 1 gallon (3.8 L) of water into the end of the gutter opposite the collection point. The gutter being tested shall not leak and shall not retain standing water.

707.12.7 Roofwasher test. Roofwashers shall be tested by introducing water into the gutters. Proper diversion of the first quantity of water in accordance with the requirements of Section 707.11.9 shall be verified.

707.12.8 Storage tank tests. Storage tanks shall be tested in accordance with the following: 1. Storage tanks shall be filled with water to the over-flow line prior to and during inspection. Seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours. 2. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks. 3. The makeup water system shall be observed for proper operation and successful automatic shutoff of the system at the refill threshold shall be verified. 707.12.9 Supply pressure test. The static water pressure at the point of use furthest from the supply shall be verified to be within the range required for the application, in accordance with Section 707.11.11.

707.12.10 Water quality test. The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. Except where site conditions as specified in ASTM E 2727 affect the rainwater, collected rainwater shall be considered to have the parameters indicated in Table 707.12.10. 707.13 Operations and maintenance manuals. Operations and maintenance materials shall be supplied in accordance with 707.13.1 through 707.13.4.

707.13.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all rainwater collection systems.

707.13.2 Schematics. The manual shall include a detailed system schematic, the locations of all system components, and a list of all system components including manufacturer and model number.

707.13.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Consumable parts including filters shall be noted along with part numbers.

707.13.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system 707.14 System abandonment. If the owner of a rainwater collection and conveyance system elects to cease use of, or fails to properly maintain such system, the system shall be abandoned and shall comply with the following: 1. System piping connecting to a utility-provided water system shall be removed or disabled. 2. The rainwater distribution piping system shall be replaced with an approved potable water supply piping system. Where an existing potable pipe system is already in place, the fixtures shall be connected to the existing system. 3. The storage tank shall be secured from accidental access by sealing or locking tank inlets and access points, or filling with sand or equivalent 707.15 Potable water applications. Where collected rainwater is to be used for potable water applications, all materials contacting the water shall comply with NSF 61. 707.15.1 Water quality testing. Collected rainwater shall be tested. Accumulated water to be tested shall be the result of not less than two rainfall events. Testing shall be in accordance with Sections 707.15.1.1 and 707.15.1.2 707.15.1.1 Test methods. Water quality testing shall be performed in accordance with the latest edition of APHA—Standard Methods for the Examination of Water and Wastewater and in accordance with Sections 707.15.1.1.1 and 707.15.1.1.2. 707.15.1.1.1 Annual tests required. Accumulated rainwater shall be tested prior to initial use and annually thereafter for *Escherichia coli*, total coliform, heterotrophic bacteria and cryptosporidium.

707.15.1.1.2 Quarterly tests required. Accumulated rainwater shall be tested prior to initial use and quarterly thereafter for pH, filterable solids, residual chlorine if disinfection is used, and turbidity. The pH shall be tested in accordance with ASTM D 5464; filterable solids shall be tested in accordance with ASTM D 5907; residual chlorine shall be tested in accordance with ASTM D 1253 and turbidity shall be tested in accordance with ASTM D 6698. 707.15.1.2 Test records. Test records shall be retained for not less than two years

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by MDE and WSSC

2011 ASHRAE 189.1 CORRELATION:

708.1 Scope. The provisions of this section shall govern the construction, installation, alteration, and repair of gray water reuse systems.

708.2 Permits. Permits shall be required for the construction, installation, alteration, and repair of gray water systems. Construction documents, engineering calculations,

diagrams, and other such data pertaining to the gray water system shall be submitted with each application for permit in accordance with the laws, rules and ordinances applicable in the jurisdiction.

708.3 Potable water connections. Where a potable water system is connected to a gray water system, the potable water supply shall be protected against backflow in accordance with Section 608 of the International Plumbing Code. 708.4 Nonpotable water connections. Where nonpotable water from different sources is combined in a system, the system shall comply with the most stringent of the requirements of this code that are applicable to such sources.

708.5 Installation. Except as provided for in this section, all systems shall be installed in compliance with the provisions of the International Plumbing Code and the manufacturer's instructions, as applicable.

708.5.1 Gray water systems for landscape irrigation. Gray water systems used for landscape irrigation purposes shall be limited to subsurface and surface irrigation applications. Gray water shall not be retained longer than 24 hours before being used for surface irrigation. Gray water to be used in gray water irrigation shall comply with the provisions of Section 708 with the exception of Sections 708.6 and 708.12.6.5. Subsurface gray water systems shall be in accordance with Section 708.14. Gray water shall be filtered by a 0.004-inch (100 micron) or finer filter. The control panel for the gray water irrigation system shall be provided with signage in accordance with Section 706.2. 708.6 Applications. Untreated gray water shall be utilized in accordance with Section 702 and local codes. Treated gray water shall be utilized in accordance with Section 706 and as permitted by local codes.

708.7 Approved components and materials. The piping, plumbing components, and materials used in gray water systems shall be manufactured of material approved for the intended application and compatible with any disinfection and treatment systems used.

708.8 Insect and vermin control. The inlets and vents to the system shall be protected to prevent insects and vermin from entering storage tanks and piping systems. Screens installed on vent pipes and overflow pipes shall have an aperture not greater than 1/16 inch (1.6 mm) and shall be close-fitting. Screen materials shall be compatible with contacting system components and shall not accelerate corrosion of system components. 708.9 Freeze protection. Where sustained freezing temperatures occur, provisions shall be made to keep storage tanks and the related piping from freezing.

708.10 Trenching requirements. Water service piping, including piping containing gray water, shall be separated from the building sewer by 5 feet (1524 mm) of undisturbed or compacted earth. Gray water piping shall be separated from potable water piping underground by 5 feet (1524 mm) of undisturbed or compacted earth. Nonpotable water

service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried gray water piping shall comply with the requirements of Section 306 of the International Plumbing Code for support, trenching, bedding, backfilling, and tunneling. Exceptions: 1. The required separation distance shall not apply where the bottom of the gray water service pipe within 5 feet (1524 mm) of the sewer is not less than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials comply with the requirements of the International Plumbing Code for such applications. 2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the gray water pipe is not less than 12 inches (305 mm) above the top of the highest point of the gray water pipe and the pipe materials comply with the requirements of the International Plumbing Code for such applications. 3. Water service pipe is permitted to be located in the same trench with a building sewer, provided that such sewer is constructed of materials that comply with the requirements of the International Plumbing Code for such applications. 4. The required separation distance shall not apply where a potable or nonpotable water service pipe crosses a sewer pipe provided that the water service pipe is sleeved to not less than 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with the requirements of the International Plumbing Code for such applications. 5. The required separation distance shall not apply where a potable water service pipe crosses a gray water pipe provided that the potable water service pipe is sleeved for a distance of not less than 5 feet (1524 mm) horizontally from the centerline of the gray water pipe on both sides of such crossing with pipe materials that comply with the requirements of the International Plumbing Code for such applications. 6. Irrigation piping located outside of a building and downstream of the backflow preventer is not required to meet the trenching requirements where gray water is used for outdoor applications. 708.11 System abandonment. If the owner of a gray water system elects to cease use of, or fails to properly maintain such system, the system shall be abandoned and shall comply with the following: 1. System piping connecting to a utility-provided water system shall be removed or disabled. 2. Storage tanks shall be secured against accidental access by sealing or locking tank inlets and access points, or filling with sand or equivalent. 708.12 Gray water systems. The design of the gray water system shall conform to accepted engineering practice.

708.12.1 Gray water sources. Gray water reuse systems shall collect waste discharge from only the following sources: bathtubs, showers, lavatories, clothes washers, and laundry trays. Water from other approved nonpotable sources including swimming pool backwash operations, air conditioner condensate, rainwater, cooling tower blowdown water, foundation drain water, steam system condensate, fluid cooler discharge water, food steamer discharge water, combination oven discharge water, industrial process water, and fire pump test water shall also be permitted to be collected for reuse by gray water systems, as approved by the code official and as appropriate for the intended application.

708.12.1.1 Prohibited gray water sources. Waste water containing urine or fecal matter shall not be diverted to gray water systems and shall discharge to the sanitary drainage system of the building or premises in accordance with the International Plumbing Code. Water from reverse osmosis system reject water, water softener discharge water, kitchen sink waste water, dishwasher waste water, and waste water discharged from wet-hood scrubbers shall not be collected for reuse within a gray water system.

708.12.2 Traps. Traps serving fixtures and devices discharging waste water to gray water reuse systems shall have a liquid seal of not less than 2 inches (51 mm) and not more than 4 inches (102 mm). Where a trap seal is subject to loss by evaporation, a trap seal primer valve shall be installed in accordance with the International Plumbing Code.

708.12.3 Collection pipe. Gray water reuse systems shall utilize drainage piping approved for use within plumbing drainage systems to collect and convey untreated gray water. Vent piping approved for use within plumbing venting systems shall be utilized for vents within the gray water system. Drains to the sanitary sewer shall use approved waste piping.

708.12.3.1 Joints. Collection piping conveying untreated gray water shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in the International Plumbing Code.

708.12.3.2 Size. Collection piping conveying rainwater from collection surfaces shall be sized in accordance with storm drainage sizing requirements specified in the International Plumbing Code 708.12.3.3 Marking. Additional marking of untreated gray water collection piping shall not be required beyond that required for sanitary drainage, waste, and vent piping by the International Plumbing Code 708.12.4 Filtration. Collected gray water shall be filtered as required for the intended end use. Filters shall be accessible for inspection and maintenance. Filters shall utilize a pressure gage or other approved method to provide indication when a filter requires servicing or replacement. Filters shall be installed with shutoff valves installed immediately upstream and downstream to allow for isolation during maintenance.

708.12.5 Disinfection. Where the intended application for collected gray water requires disinfection or other treatment or both, collected gray water shall be disinfected as needed to ensure that the required water quality is delivered at the point of use. Where chlorine is used for disinfection or treatment, water shall be tested for residual chlorine in accordance with ASTM D 1253. The levels of residual chlorine shall not exceed the levels allowed for the intended use in accordance with the requirements of the jurisdiction. Untreated gray water shall be retained in collection reservoirs for a maximum of 24 hours in accordance with Section 708.12.6.1.

708.12.6 Storage tank. The design of the storage tank shall be in accordance with Sections 708.12.6.1 through 708.12.6.10 of 24 hours..

708.12.6.1 Sizing. The holding capacity of the storage tank shall be sized in accordance with the anticipated demand. Where gray water is to be used in untreated form for groundwater recharge or subsurface irrigation, the storage tank shall be sized to limit the retention time of gray water to a maximum 708.12.6.2 Location. Storage tanks shall be installed above or below grade. Above-grade storage tanks shall be protected from direct sunlight and shall be constructed using opaque, UV-resistant materials such as, but not limited to, heavily tinted plastic, fiberglass, lined metal, concrete, wood, or painted to prevent algae growth, or shall have specially constructed sun barriers including, but not limited to, installation in garages, crawlspaces, or sheds. Storage tanks and their manholes shall not be located directly under any soil or waste piping or any source of contamination. Gray water storage tanks shall be located with a minimum horizontal distance between various elements as indicated in Table 708.12.6.2. Storage tanks containing untreated gray water shall be located a minimum horizontal distance of 5 feet (1524 mm) from buildings, in addition to the requirements in Table 708.12.6.2 708.12.6.3 Materials. Where collected onsite, water shall be collected in an approved tank constructed of durable, nonabsorbent and corrosion-resistant materials. The storage tank shall be constructed of materials compatible with any disinfection systems used to treat water upstream of the tank and with any systems used to maintain water quality within the tank.

708.12.6.3.1 Wood tanks. Wooden storage tanks that are not equipped with a makeup water source shall be provided with a flexible liner.

708.12.6.4 Makeup water. Where an uninterrupted supply of makeup water is required for the intended application, potable or municipally supplied reclaimed/ recycled water shall be provided as a source of makeup water for the storage tank. The potable, reclaimed or recycled water supply shall be protected against backflow by means of an air gap not less than 4 inches (102 mm) above the overflow or an approved backflow device in accordance with the International Plumbing Code. There shall be a full-open valve located on the makeup water supply line to the storage tank. Inlets to storage tank shall be controlled by fill valves or other automatic supply valves installed so as to prevent the tank from overflowing and to prevent the water level from dropping below a predetermined point. Where makeup water is provided, the water level shall not be permitted to drop below the gray water inlet or the intake of any attached pump.

708.12.6.5 Overflow. The storage tank shall be equipped with an overflow pipe having the same or larger area as the sum of the areas of all reservoir inlet pipes. The overflow pipe shall be trapped and shall be indirectly connected to the sanitary drainage system. The overflow drain shall not be equipped with a shutoff valve. A minimum of one cleanout shall be provided on each overflow pipe in accordance with Section 708 of the International Plumbing Code.

708.12.6.6 Access. A minimum of one access opening shall be provided to allow inspection and cleaning of the tank interior. Access openings shall have an approved locking device or other approved method of securing access. Below-grade storage tanks, located outside of the building, shall be provided with either a manhole not less than 24 inches (610 mm) square or a manhole with an inside diameter not less than 24 inches (610 mm) and extending not less than 4 inches (102 mm) above ground. Finished grade shall be sloped away from the manhole to divert surface water from the manhole. Each manhole cover shall have a locking device. Service ports in manhole covers shall be not less than 8 inches (203 mm) in diameter and shall be not less than 4 inches (102 mm) above the finished grade level. The service port shall have a locking cover or a brass cleanout plug. Exception: Storage tanks under 800 gallons (3024 L) in volume installed below grade shall not be required to be equipped with a manhole, but shall have a service port not less than 8 inches (203 mm) in diameter. 708.12.6.7 Venting. The tank shall be provided with a vent sized in accordance with the International Plumbing Code and based on the diameter of the tank influent pipe. The reservoir vent shall not be connected to sanitary drainage vent system. 708.12.6.8 Outlets. Outlets shall be located not less than 4 inches (102 mm) above the bottom of the storage tank, and shall not skim water from the surface. 708.12.6.9 Drain. A drain shall be located at the lowest point of the storage tank and shall be indirectly connected to the sanitary drainage system. The total area of all drains shall not be smaller than the total area of all overflow pipes. Not less than one cleanout shall be provided on each drain pipe in accordance with Section 708 of the International Plumbing Code.

708.12.6.10 Signage. Each storage tank shall be marked with its rated capacity and the location of the upstream bypass valve. The contents of storage tanks shall be identified with the words "CAUTION: NON- POTABLE WATER DO NOT DRINK." Where an opening is provided that could allow the entry of personnel, the opening shall be marked with the words, "DANGER CONFINED SPACE." Markings shall be indelibly printed on a tag or sign constructed of corrosion-resistant waterproof material mounted on the tank or shall be indelibly printed on the tank. The letters of the words shall be not less than 0.5 inches (13 mm) in height and shall be of a color in contrast with the background on which they are applied.

708.12.7 Valves. Valves shall be supplied in accordance with Sections 708.12.7.1 and 708.12.7.2 708.12.7.1 Bypass valve. One three-way diverter valve listed and labeled to NSF 50 or other approved device shall be installed on gray water collection piping upstream of each storage tank, or drainfield, as applicable, to divert untreated gray water sources to the sanitary sewer to allow servicing and inspection of the system. Bypass valves shall be installed downstream of fixture traps and vent connections. Bypass valves shall be marked to indicate the direction of flow, connection and storage tank or drainfield connection. Bypass valves shall be installed in accessible locations. Two shutoff valves shall not be installed to serve as a bypass valve 708.12.7.2 Backwater valve. Overflow and tank drain piping shall be protected against backwater conditions by the installation of one or more backwater valves. Backwater valves shall

be installed so that access is provided to the working parts for service and repair

708.12.8 Vent piping. Storage tanks shall be provided with a vent in accordance with the requirements of Section 708.12.6.8. Vents shall be sized in accordance with the International Plumbing Code, based on the aggregate diameter of storage tank influent pipes. Open vents shall be protected from contamination by means of a U-bend installed with the opening directed downward or an approved cap. Vent outlets shall extend not less than 4 inches (102 mm) above grade, or as necessary to prevent surface water from entering the storage tank. Vent openings shall be protected against the entrance of vermin and insects in accordance with the requirements of Section 708.8.

708.12.9 Pumping and control system. Mechanical equipment including pumps, valves and filters shall be accessible and removable in order to perform repair, maintenance and cleaning. Pressurized water shall be supplied at a pressure appropriate for the application and within the range specified by the International Plumbing Code. Where water could be supplied at an excessive pressure, a pressure-reducing valve shall be installed in accordance with the requirements of the International Plumbing Code.

708.12.9.1 Standby power. Where required for the intended application, automatically activated standby power, capable of powering all essential treatment and pumping systems under design conditions shall be provided.

708.12.9.2 Inlet control valve alarm. Makeup water systems shall be provided with a warning mechanism that alerts the user to a failure of the inlet control valve to close correctly. The alarm shall activate before the water within the collection reservoir storage tank begins to discharge into the overflow system.

708.12.9.3 Water-pressure-reducing valve or regulator. Where the gray water pressure supplied by the pumping system exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the gray water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8 of the International Plumbing Code

708.12.10 Distribution pipe. Distribution piping shall comply with Sections 708.12.10.1 through 708.12.10.4.

708.12.10.1 Materials. Distribution piping conveying gray water shall conform to standards and requirements specified by the International Plumbing Code.

708.12.10.2 Joints. Distribution piping conveying gray water shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in the International Plumbing Code.

708.12.10.3 Size. Distribution piping conveying gray water shall be sized in accordance with the International Plumbing Code for the intended application or applications.

708.12.10.4 Marking. All gray water distribution piping shall be either the color purple and embossed or integrally stamped or marked "CAUTION: NONPOTABLE WATER DO NOT DRINK" or shall be installed with a purple identification tape or wrap. Identification tape shall be not less than 3 inches (76 mm) wide and have white or black

lettering on purple field stating "CAUTION: NONPOTABLE WATER DO NOT DRINK." Identification tape shall be installed on top of gray water distribution pipes, fastened not greater than every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe. Lettering shall be readily observable within the room or space where the piping is located. Exception: Outside of the building, purple piping is not required downstream of the backflow preventer where gray water is used for outdoor applications. 708.13 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 708.13.1 through 708.13.8. 708.13.1 Drainage and vent test. A pressure test shall be applied to the gray water collection piping, overflow piping, storage tank drainage piping and tank vent piping in accordance with Section 312 of the International Plumbing Code. and rainwater distribution piping shall be conducted in accordance with Section 312.5 of the International Plumbing Code. 708.13.2 Drainage and vent final test. A final test shall be applied to the gray water collection piping, overflow piping, and tank vent piping in accordance with Section 312.4 of the International Plumbing Code.

708.13.3 Water supply system test. The testing of makeup water supply piping 708.13.4 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers and backwater valves shall be conducted in accordance with Section 312.10 of the International Plumbing Code.

708.13.5 Inspection vermin and insect protection. Inlets and vents to the system shall be inspected to verify that each is protected to prevent the entrance of insects and vermin into the storage tank and piping systems in accordance with Section 708.8. 708.13.6 Storage tank tests. Storage tanks shall be tested in accordance with all of the following: 1. Storage tanks shall be filled with water to the overflow line prior to and during inspection. All seams and joints shall be left exposed and the tank shall remain water tight without leakage for a period of 24 hours. 2. After 24 hours, supplemental water shall be introduced for a period of 15 minutes to verify proper drainage of the overflow system and verify that there are no leaks. 3. Following the successful test of the overflow, the water level in the tank shall be reduced to a point that is 2 inches (51 mm) below the makeup water trigger point using the tank drain. The tank drain shall be observed for proper operation. The makeup water system shall be observed to verify proper operation, and successful automatic shutoff of the system at the refill threshold. Water shall not be drained from the overflow at any time during the refill test.

708.13.7 Supply pressure test. The static water pressure at the point of use furthest from the supply shall be verified to be within the range required for the application, in accordance with Section 707.12.9.

708.13.8 Water quality test. The quality of the water for the intended application shall be verified at the point of use in accordance with the requirements of the jurisdiction. 708.14 Subsurface gray water irrigation systems. Gravity subsurface gray water irrigation systems, where provided in accordance with Section 404.1.1, shall be

designed and installed in accordance with Sections 708.14.1 through 708.14.6. Gray water collection and storage systems shall comply with this section and the provisions of Section 708 except for Sections 708.6 and 708.12.6.5.

708.14.1 Estimating gray water discharge. The irrigation system shall be sized in accordance with the gallons-per-day-per-occupant number based on the type of fixtures connected to the gray water system. The discharge shall be calculated by the following equation: $C = (A \times B) - D$ (Equation 7-1) where: A= Number of occupants: Residential—For dwelling units regulated by this code in accordance with Section 101.3, the number of occupants shall be determined by the actual number of occupants, but not less than two occupants for one bedroom and one occupant for each additional bedroom. Commercial—Number of occupants for buildings without dwelling units shall be determined by the International Building Code. B= Estimated flow demands for each occupant: Residential—For dwelling units regulated by this code in accordance with Section 101.2, 25 gallons per day (94.6 Lpd) per occupant for showers, bathtubs and lavatories and 15 gallons per day (56.7 Lpd) per occupant for clothes washers or laundry trays. Commercial—For buildings, without dwelling units, based on type of fixture or water use records minus the discharge of fixtures other than those discharging gray water. C= Estimated gallons (L) of gray water discharge based on the total number of occupants. D= Estimated gallons (L) of gray water to be used within the interior of the building. 708.14.2 Percolation tests. The permeability of the soil in the proposed absorption system shall be determined by percolation tests or permeability evaluation.

708.14.2.1 Percolation tests and procedures. Not less than three percolation tests in each system area shall be conducted. The holes shall be spaced uniformly in relation to the bottom depth of the proposed absorption system. Additional percolation tests shall be made where necessary, depending on system design.

708.14.2.1.1 Percolation test hole. The test hole shall be dug or bored. The test hole shall have vertical sides and a horizontal dimension of 4 inches to 8 inches (102 mm to 203 mm). The bottom and sides of the hole shall be scratched with a sharp-pointed instrument to expose the natural soil. All loose material shall be removed from the hole and the bottom shall be covered with 2 inches (51 mm) of gravel or coarse sand.

708.14.2.1.2 Test procedure, sandy soils. The hole shall be filled with clearwater to a depth of not less than 12 inches (305 mm) above the bottom of the hole for tests in sandy soils. The time for this amount of water to seep away shall be determined, and this procedure shall be repeated if the water from the second filling of the hole seeps away in 10 minutes or less. The test shall proceed as follows: 1. Water shall be added to a point not more than 6 inches (152 mm) above the gravel or coarse sand. 2. Thereupon, from a fixed reference point, water levels shall be measured at 10-minute intervals for a period of 1 hour. 3. Where 6 inches (152 mm) of water seeps away in less than 10 minutes, a shorter interval between measurements shall be used, but in no case shall the water depth exceed 6 inches (152 mm). Where 6 inches (152 mm) of

water seeps away in less than 2 minutes, the test shall be stopped and a rate of less than 3 minutes per inch (7.2 s/mm) shall be reported. 4. The final water level drop shall be used to calculate the percolation rate. Soils not meeting the above requirements shall be tested in accordance with Section 708.14.2.1.3.

708.14.2.1.4 Mechanical test equipment. Mechanical percolation test equipment shall be of an approved type.

708.14.2.1.3 Test procedure, other soils. The hole shall be filled with clear water, and a water depth of not less than 12 inches (305 mm) shall be maintained above the bottom of the hole for a 4-hour period by refilling whenever necessary or by use of an automatic siphon. Water remaining in the hole after 4 hours shall not be removed. Thereafter, the soil shall be allowed to swell not less than 16 hours or more than 30 hours. Immediately after the soil swelling period, the measurements for determining the percolation rate shall be made as follows: 1. Any soil sloughed into the hole shall be removed and the water level shall be adjusted to 6 inches (152 mm) above the gravel or coarse sand. 2. From a fixed reference point, the water level shall be measured at 30-minute intervals for a period of 4 hours, unless two successive water level drops do not vary by more than 1 16 inch (1.59 mm). Not less than three water level drops shall be observed and recorded. 3. The hole shall be filled with clear water to a point not more than 6 inches (152 mm) above the gravel or coarse sand whenever it becomes nearly empty. Adjustments of the water level shall not be made during the three measurement periods except to the limits of the last measured water level drop. 4. When the first 6 inches (152 mm) of water seeps away in less than 30 minutes, the time interval between measurements shall be 10 minutes and the test run for 1 hour. The water depth shall not exceed 5 inches (127 mm) at any time during the measurement period. 5. The drop that occurs during the final measurement period shall be used in calculating the percolation rate.

708.14.3 Permeability evaluation. Soil shall be evaluated for estimated percolation based on soil structure and texture in accordance with accepted soil evaluation practices. Borings shall be made in accordance with Section 708.14.2.1 for evaluating the soil.

708.14.4 Subsurface landscape irrigation site location. The surface grade of all soil absorption systems shall be located at a point lower than the surface grade of any water well or reservoir on the same or adjoining lots. Where this is not possible, the irrigation system shall be located so that surface water drainage from the building site is not directed toward a well or reservoir. The soil absorption system shall be located with a minimum horizontal distance between various elements as indicated in Table 708.14.4 and as provided in Section 708.12.6.2. Surface water shall be diverted away from any soil absorption site on the same or adjoining lots.

708.14.5 Installation. Absorption systems shall be installed in accordance with Sections 708.14.5.1 through 708.14.5.5 to provide landscape irrigation without surfacing of gray water. Excavations shall not encroach upon the critical root zone (CRZ) of protected trees.

708.14.5.1 Absorption area. The total absorption area required shall be computed from the estimated daily gray water discharge and the design-loading rate based on the percolation rate for the site. The required absorption area equals the estimated gray water discharge divided by the design-loading rate from Table 708.14.5.1.

708.14.5.2 Seepage trench excavations. Seepage trench excavations shall be not less than 1 foot (304 mm) and not greater than 5 feet (1524 mm) wide. Trench excavations shall be spaced not less than 2 feet (610 mm) apart. The soil absorption area of a seepage trench shall be computed by using the bottom width of the trench multiplied by the length of pipe. Individual seepage trenches shall not exceed 100 feet (30 480 mm) in developed length.

708.14.5.3 Seepage bed excavations. Seepage bed excavations shall be not less than 5 feet (1524 mm) wide and shall have more than one distribution pipe. The absorption area of a seepage bed shall be computed by using the bottom of the trench area. Distribution piping in a seepage bed shall be uniformly spaced a not greater than 5 feet (1524 mm) and not less than 3 feet (914 mm) apart, and not greater than 3 feet (914 mm) and not less than 1 foot (305 mm) from the sidewall or headwall. 708.14.5.4 Excavation and construction. The bottom of a trench or bed excavation shall be level. Seepage trenches or beds shall not be excavated where the soil is so wet that such material rolled between the hands forms a soil wire. All smeared or compacted soil surfaces in the sidewalls or bottom of seepage trench or bed excavations shall be scarified to the depth of smearing or compaction and the loose material removed. Where rain falls on an open excavation, the soil shall be left until sufficiently dry so a soil wire will not form when soil from the excavation bottom is rolled between the hands. The bottom area shall then be scarified and loose material removed.

708.14.5.5 Aggregate and backfill. Not less than a 6- inch-thick (152 mm) layer of aggregate ranging in size from 1 2 to 2 1 2 inches (12.7 mm to 64 mm) shall be laid into the trench below the distribution piping elevation. The aggregate shall be evenly distributed in a layer not less than 2 inches (51 mm) thick over the top of the distribution pipe. The aggregate shall be covered with approved synthetic materials or 9 inches (229 mm) of uncompacted marsh hay or straw. Building paper shall not be used to cover the aggregate. Not less than 9 inches (229 mm) of soil backfill shall be placed on top of the synthetic material or marsh hay or straw.

708.14.6 Distribution piping. Distribution piping shall be not less than 3 inches (76 mm) in diameter. The top of the distribution pipe shall be not less than 8 inches (203 mm) below the original surface. The slope of the distribution pipes shall be not less than 2

inches (51 mm) and not greater than 4 inches (102 mm) per 100 feet (30 480 mm).

708.15 Operation and maintenance manuals. Operations and maintenance materials shall be supplied with gray water systems in accordance with Sections 708.15.1 through 708.15.4.

708.15.1 Manual. A detailed operations and maintenance manual shall be supplied in hardcopy form with all gray water systems.

708.15.2 Schematics. The manual shall include a detailed system schematic, locations of all system components, and a list of all system components including manufacturer and model number.

708.15.3 Maintenance procedures. The manual shall provide a maintenance schedule and procedures for all system components requiring periodic maintenance. Consumable parts including filters shall be noted along with part numbers.

708.15.4 Operations procedures. The manual shall include system startup and shutdown procedures. The manual shall include detailed operating procedures for the system.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by MDE and WSSC

2011 ASHRAE 189.1 CORRELATION: None

709.1 Scope. The provisions of this section shall govern the construction, installation, alteration, and repair of systems supplying nonpotable reclaimed water.

709.2 Permits. Permits shall be required for the construction, installation, alteration, and repair of reclaimed water systems. Construction documents, engineering calculations, diagrams, and other such data pertaining to the reclaimed system shall be submitted with each application for permit.

709.3 Potable water connections. Connections between a reclaimed water system and a potable water system shall be protected against backflow in accordance with Section 608 of the International Plumbing Code.

709.4 Installation. Except as provided for in this section, systems shall be installed in compliance with the provisions of the International Plumbing Code and the manufacturer's instructions, as applicable.

709.5 Applications. Reclaimed water shall be utilized in accordance with Section 706 and local codes.

709.5.1 Reclaimed water for landscape irrigation. Reclaimed water used for landscape irrigation purposes shall be limited to subsurface applications. Reclaimed water used in irrigation systems shall comply with the provisions of Section 709 except for Section 709.5. Reclaimed water shall be filtered by a 0.004-inch (100 micron) or finer filter. The control panel for the reclaimed water irrigation system shall be provided with signage in accordance with Section 706.2. Exception: Subject to the approval of the code official based on the extent of purification occurring in reclamation process, reclaimed water shall be permitted in sprinkler irrigation applications.

709.6 Approved components and materials. Piping, plumbing components, and material used in the reclaimed water systems shall be manufactured of material approved for the intended application.

709.7 Water-pressure-reducing valve or regulator. Where the reclaimed water pressure supplied to the building exceeds 80 psi (552 kPa) static, a pressure-reducing valve shall be installed to reduce the pressure in the reclaimed water distribution system piping to 80 psi (552 kPa) static or less. Pressure-reducing valves shall be specified and installed in accordance with Section 604.8 of the International Plumbing Code.

709.8 Trenching requirements. Water service piping, including piping containing reclaimed water, shall be separated from the building sewer by 5 feet (1524 mm) of undisturbed or compacted earth. Reclaimed water piping shall be separated from potable water piping underground by 5 feet (1524 mm) of undisturbed or compacted earth. Reclaimed water service pipes shall not be located in, under or above cesspools, septic tanks, septic tank drainage fields or seepage pits. Buried reclaimed water piping shall comply with the requirements of Section 306 of the International Plumbing Code for support, trenching, bedding, backfilling and tunneling. Exceptions: 1. The required separation distance shall not apply where the bottom of the reclaimed water service pipe within 5 feet (1524 mm) of the sewer is not less than 12 inches (305 mm) above the top of the highest point of the sewer and the pipe materials comply with the requirements of the International Plumbing Code for the application. 2. The required separation distance shall not apply where the bottom of the potable water service pipe within 5 feet (1524 mm) of the reclaimed water pipe is not less than 12 inches (305 mm) above the top of the highest point of the reclaimed water pipe and the pipe materials comply with the requirements of the International Plumbing Code for the application. 3. Water service pipe is permitted to be located in the same trench with a building sewer, provided such sewer is constructed of materials that comply with the requirements of the International Plumbing Code for the application. 4. The required separation distance shall not apply where a potable or nonpotable water service pipe crosses a sewer pipe provided the water service pipe is sleeved to not less than 5 feet (1524 mm) horizontally from the sewer pipe centerline on both sides of such crossing with pipe materials that comply with the requirements of the International Plumbing Code for the application. 5. The required separation distance shall not apply where a potable water service pipe

crosses a reclaimed water pipe provided the potable water service pipe is sleeved to not less than 5 feet (1524 mm) horizontally from the reclaimed water pipe centerline on both sides of such crossing with pipe materials that comply with the requirements of the International Plumbing Code for the application.

709.9 Reclaimed water systems. The design of the reclaimed water systems shall conform to ASTM E 2635 and accepted engineering practice. 709.9.1 Distribution pipe. Distribution piping shall comply with Sections 709.9.1.1 through 709.9.1.4.

709.9.1.1 Materials. Distribution piping conveying reclaimed water shall conform to standards and requirements specified by the International Plumbing Code.

709.9.1.2 Joints. Distribution piping conveying reclaimed water shall utilize joints approved for use with the distribution piping and appropriate for the intended applications as specified in the International Plumbing Code.

709.9.1.3 Size. Distribution piping conveying reclaimed water shall be sized in accordance with the International Plumbing Code for the intended application.

709.9.1.4 Marking. Reclaimed water distribution piping shall be either the color purple and embossed or integrally stamped or marked "CAUTION: NONPOTABLE WATER DO NOT DRINK" or be installed with a purple identification tape or wrap. Identification tape shall be not less than 3 inches (76 mm) wide and have white or black lettering on purple field stating "CAUTION: NONPOTABLE WATER DO NOT DRINK." Identification tape shall be installed on top of reclaimed water distribution pipes, fastened not greater than every 10 feet (3048 mm) to each pipe length and run continuously the entire length of the pipe. Lettering shall be readily observable within the room or space where the piping is located. Exception: Outside of the building, purple piping is not required downstream of the backflow preventer where reclaimed water is used for outdoor applications.

709.10 Tests and inspections. Tests and inspections shall be performed in accordance with Sections 709.10.1 and 709.10.2. 709.10.1 Water supply system test. The testing of makeup water supply piping and reclaimed water distribution piping shall be conducted in accordance with Section 312.5 of the International Plumbing Code. 709.10.2 Inspection and testing of backflow prevention assemblies. The testing of backflow preventers shall be conducted in accordance with Section 312.10 of the International Plumbing Code.

PROPOSED ACTION: Delete

RATIONALE / IMPACT: Regulated by MDE and WSSC

2011 ASHRAE 189.1 CORRELATION: Chapter 6

710.1 Alternate nonpotable sources of water. Other onsite sources of nonpotable water including, but not limited to, stormwater, reverse osmosis reject water, foundation drain water and swimming pool backwash water, shall be permitted to be used for nonpotable uses provided that they have been treated to the quality level necessary for their intended use and in accordance with requirements of the jurisdiction having authority.

PROPOSED ACTION: Adopt as written

RATIONALE / IMPACT: Good practice

2011 ASHRAE 189.1 CORRELATION: 6.3.3

WSSC comments for Chapter 7 of the 2012 IGCC

June 25, 2014; by Tom Buckley

Sec. 27. Section 701.2 **Compliance documentation.**

WSSC Comment: Remove “except where regulated by the Washington Suburban Sanitary Commission (WSSC) and”. Also Add “Montgomery County” ahead of “code official”

Sec. XX. Section 702. **FIXTURES, FITTINGS, EQUIPMENT AND APPLIANCES**

WSSC Comment: Delete all of 702, including Table 702.1, and replace with a new section: 702.1.

Fixtures, fittings, equipment and appliances requirements. Fixtures, fittings, equipment and appliances consumption, piping arrangements, and other related requirements shall comply with the latest provisions of the WSSC Plumbing and Fuel Gas Code.

Reason: Altering the very core of plumbing fixture requirements should be vetted by the WSSC Plumbing and Fuel Gas Board and the WSSC Commissioners. WSSC staff is prepared to present these items for consideration during its next code development cycle; which begins September 2014 and concludes with an estimated effective date of June 2015.

Sec. XX. Section 703.1 **Hydronic closed systems**

WSSC Comment: Delete section. Boiler safety requirements call for automatic feed systems. Relying solely on a low water cut-off is a significant step-backwards in safety.

Sec XX. Section 703.3 **Condensate coolers and tempering.**

WSSC Comment: Delete entire section. This one size fits all approach is not appropriate for large heating plants.

Sec. XX. Section 703.4 **Condensate drainage recovery.**

WSSC Comment: Delete entire section. This regulation cannot require condensate recovery re-use because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 703.6 **Humidifier discharge.**

WSSC Comment: Delete entire section. This regulation cannot require humidifier discharge recovery re-use because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 703.7.3 **Metering.**

WSSC Comment: Delete entire section. Until a County program is developed to mandate and police certain quantity limitations, requiring the installation of a meter is un-necessary expense. WSSC allows

for owner/operators to apply for a *Submeter* to facilitate a reduction in sewer charges for water that is evaporated and not discharged to the sanitary sewer.

Sec. XX. **Section 703.7.6 Water quality.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use non-potable water (derived from a re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. **Section 703.7.7 Discharge.**

WSSC Comment: Delete entire section. This regulation cannot require cooling tower discharge recovery re-use because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. **Section 703.8.2 Water sources.**

WSSC Comment: Delete entire section. This regulation cannot require alternate onsite non-potable water or reclaimed water re-use because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. **Section 703.9.4 Discharge water reuse.**

WSSC Comment: Delete entire section. This regulation cannot require evaporative cooler discharge water recovery re-use because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. **Section 704.3 Onsite reclaimed water treatment systems.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. **Section 705 Metering.**

WSSC Comment: Delete entire section, including table 705.1. Until a County program is developed to mandate and police certain quantity limitations, requiring the installation of a meter is un-necessary expense. When resolved, metering requirements shall be vetted into the WSSC Plumbing and Fuel Gas Code. In general, WSSC allows for owner/operators to apply for a *Submeter* to facilitate a reduction in sewer charges for water that not discharged to the sanitary sewer. WSSC has jurisdictional and proprietary control over the installation of potable water metering.

Sec. XX. **Section 706 NONPOTABLE WATER REQUIREMENTS.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 707 **RAINWATER COLLECTION AND DISTRIBUTION SYSTEMS.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 708 **GRAY WATER SYSTEMS.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 709 **RECLAIMED WATER SYSTEMS.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.

Sec. XX. Section 710 **ALTERNATE ONSITE NONPOTABLE WATER SOURCES.**

WSSC Comment: Delete entire section. This regulation cannot recognize the use of non-potable water (derived from any re-use system), because Montgomery County lacks water re-use regulations and an enforcement program.